

Reprint

ISSN 1997-2571 (Web Version)

Journal of Innovation & Development Strategy (JIDS)

(*J. Innov. Dev. Strategy*)

Volume: 9

Issue: 2

August 2015

J. Innov. Dev. Strategy 9(2): 28-33 (August 2015)

**NUTRITIONAL STATUS OF GOVERNMENT PRIMARY SCHOOL CHILDREN AT
URBAN AREAS OF JESSORE DISTRICT IN BANGLADESH**

M.S. ISLAM, M.E. HOQUE, S. NIGAR, S.M. AL HASAN AND M.R. SHAIBUR



An International Scientific Research Publisher

Green Global Foundation®

Web address: <http://ggfjournals.com/e-journals archive>

E-mails: editor@ggfjournals.com and editor.int.correspondence@ggfjournals.com



NUTRITIONAL STATUS OF GOVERNMENT PRIMARY SCHOOL CHILDREN AT URBAN AREAS OF JESSORE DISTRICT IN BANGLADESH

M.S. ISLAM¹, M.E. HOQUE², S. NIGAR³, S.M. AL HASAN⁴ AND M.R. SHAIBUR⁵

^{1,2,3,4}Department of Nutrition and Food Technology, Jessore University of Science and Technology, Jessore-7408, Bangladesh;

⁵Dept. of Environmental Science and Technology, Jessore University of Science and Technology, Jessore-7408, Bangladesh.

*Corresponding author & address: Molla Rahman Shaibur, E-mail: shaibur75@yahoo.com
Accepted for publication on 20 July 2015

ABSTRACT

Islam MS, Hoque ME, Nigar S, Al Hasan SM, Shaibur MR (2015) Nutritional status of government primary school children at urban areas of Jessore district in Bangladesh. *J. Innov. Dev. Strategy*. 9(2), 28-33.

This cross-sectional study was designed to assess the prevalence of malnutrition among urban government primary school children of Jessore District, Bangladesh. A total of 720 students were selected by using multistage sampling process from 24 primary schools of Jessore: 3 schools from each of the eight upazilas of Jessore and 30 students from each of the schools. In the study group, 52.4% were boys and 47.6% were girls. About 31% students were found underweight (boys 32.1% and girls 28.9%), 66% were normal (boys 64.7% and girls 66.5%) and 3.4% were overweight (boys 3.2% and girls 5.2%). Malnutrition was more severe among boys than girls of the same age groups. The risk of malnutrition was more severe in joint family children whose mothers were illiterate and children with working mothers. Regarding the hygiene practice, all the students washed their hand before eating and after defecation. They also found to brush their teeth regularly and about 96% used tube-well water for drinking. From this study, we can point out that, most of the children were normal and percentage of underweight children was low from the national level. Nutrition specific as well as sensitive interventions may be recommended for these primary school children.

Key words: *hygienic practice, malnutrition, primary school children, underweight*

INTRODUCTION

Primary school age is a vibrant period of physical growth as well as of mental development of the children. Because of this superior period of growth and development primary school age children are the most vulnerable to malnutrition (McPherson *et al.* 1995). Previous research indicates that health problems due to miserable nutritional status in primary school-age children are among the most common causes of low school enrolment, high absenteeism, early dropout and unsatisfactory classroom performance (Best *et al.* 2010). Globally the present scenario of health and nutritional status of the children is very unsatisfactory. Poor nutrition causes almost half of deaths in children less than five years of age each year (Best *et al.* 2010). One out of six children in developing countries is underweight. About 25% of the world's children are stunted. In developing countries the proportion can rise to 33%. About 80% of the world's stunted children live in just 20 (twenty) countries (World Health Organization 2012). Around 66 million primary school age children attend classes in hungry condition across the developing world. World Food Program calculates that US\$ 3.2 billion is needed per year to reach all 66 million hungry school age children. There are 67 million school age children who do not attend school. Poor households must often choose between sending their children to school or to work in the fields. As of 2012, thirty one (31) million primary-school pupils worldwide dropped out from school. In 2011, 1 in 6 children were estimated to be underweight in developing countries with most (56 million) living in South-central Asia (Smith and Haddad, 2000).

The current situation of health and nutritional status of school-age children in Bangladesh is extremely unacceptable. Rates of malnutrition in Bangladesh are among the highest in the world. About 48% of Bangladeshi children are malnourished and 1.5 million of them die each year from diarrhea that worsens and is worsened by malnutrition (Ahmed *et al.* 2012). More than 54% of preschool age children, equivalent to more than 9.5 million children, are stunted, 56% are underweight and more than 17% are wasted. Although all administrative divisions were affected by child malnutrition, there were important differences in the prevalence's of the three anthropometric indicators. The prevalence of underweight ranged from 49.8% in Khulna to 64.0% in Sylhet which also showed the highest prevalence of stunting (61.4%) and wasting (20.9%). Barisal and Khulna have the lowest stunting and underweight rates as well as the lowest share of the total stunted children in Bangladesh (World Health Organization 2012). Being a division of Khulna, no study has reported about the nutritional status of primary school children of Jessore District.

Jessore being a densely populated District in Bangladesh was established in 1781 with total population of 247, 1554 (male 127, 7650 and female 119, 3904). It consists of 4 municipalities, 36 wards, 8 upazilas, 92 unions and 1434 villages. The average literacy rate in this District is 45.2% which is very low compared to the rest of the world, but average in Bangladesh. About 41.0% of boys are literate, while only 25.1% girls are literate. The allocations of main occupations are: agriculture 39.84%, agricultural laborer 24.13%, and wage laborer 2.68%, commerce 11.99%, service 8.66%, industry 1.41%, transport 3.11% and others 8.18 % (Islam and Jamal, 2007). There are 662 government primary schools, 481 registered primary schools, 85 community primary schools, 100 junior high schools, 335 high schools, 50 colleges, 1 medical college and a university in Jessore district (Islam and Jamal, 2007).

The aim of the study was to identify nutritional status and related factors among primary school children (6-10 years) at urban area in Jessore district, Bangladesh. The study will also investigate the prevalence of socio-demographic factors, hygiene practice and nutritional status among primary school children and also analyze factors associated with malnutrition in children.

METHODOLOGY

Study Area: The study was conducted in Jessore District of Khulna division of Bangladesh at eight upazilas namely- Abhaynagar, Bagherpara, Chaugachha, Jessore Sadar, Jhikargachha, Keshabpur, Manirampur, and Sharsha (Fig. 1.) from June to December, 2014. This district is one of most ancient cities in the Indian sub-continent as well as Bangladesh. It is bounded by Jhenaidah and Magura districts on the North, Satkhira and Khulna districts on the South, Narail and Khulna districts on the East, West Bengal state of India on the West.



Fig. 1. Pointing Out the Study Areas

Study Design: The present research is a cross-sectional study and descriptive in nature that sought to construct a profile of the nutritional status of primary school children. The target population of this study was urban government primary school students aged between 6 to 10 years at upazila level of Jessore District, Bangladesh. Pilot testing was conducted to prevent unexpected events and problems that could occur while dealing with young children.

Sample Size: Three urban government primary schools were selected randomly from a list of primary schools of each of the eight upazilas of Jessore district. From each of the school, 30 students were randomly selected which accounted 90 students from each of the upazilas. Students from class one to five were selected with equal share from each class for the study. Simple random sampling was carried out to select 6 students from each class. Hence, the total number of the students for this study from all upazilas was 720.

Measurements: A structured questionnaire was used for data collection. The questionnaire was designed to obtain relevant information on socio-demographic, socio-economic, anthropometric and hygiene practices, visual assessment, hygiene practices and medication period and place. Each child's height and weight were measured in metric system by using standardized technique (Jelliffe 1966). The height of each student was measured using a stadiometer with an accuracy of 0.1 cm. Each child was made to stand without footwear with the feet parallel and with back and heel against a vertical ruled bar. The weight of each child was measured using 'Electronic body scale TCS 200-RT' which was portable and with an accuracy of 100g. Before data collection, the questionnaire was pre-tested for checking validity and reliability.

Data Analysis: After collection, all data were coded, compiled and analyzed and appropriate statistical tests were applied. SPSS software was used for analysis of data. Five percent level of significance was considered for statistical tests. Different descriptive statistics are used to check the outliers and distribution of the data. Chi-square test was performed to measure the association of categorical variables and also their level of statistical significance. An anthropometric software (WHO Anthro Plus) was used to classify the nutritional status into categories by converting the anthropometric data into nutritional indicators. Height for age (stunted), weight for height (wasted), and weight for age (underweight) for each child were calculated (Waterlow *et al.* 1977) and compared with the CDC 2000 (Kuczmarski *et al.* 2002). Cut-off point values between $\pm 2SD$ from mean were

considered normal (World Health Organization 1995). Weight for age is not a good indicator to measure nutritional status for children above 10 years of age as this index has the shortcoming to distinguish between height and body mass. World Health Organization (2012) has recommended BMI for age (in Z scores and percentiles) as an indicator for assessing nutritional status of children 10-19 years old. BMI for age percentiles, with the percentile range of 5th to 95th, was being used to indicate nutritional status of the students in this study.

Ethical issues: The purpose and objective of the study was explained clearly to the headmaster/headmistress of the respective schools and their permission was taken to conduct this study. Verbal consent was taken from mothers as well as from children who were able to understand.

RESULTS

Description of Predisposing Factors

The percentage sharing of socio-demographic factors such as grades of class, gender, age and religion of the students are presented in Table 1. The distribution of students was same from each of the class grade and age level (20%). Most of the students were (86.53%) Muslim followed by Hindu (13.47%). Percentages of boys and girls students were 52.36% and 47.64%, respectively.

Table 1. Percent distribution of the students based on socio-demographic characteristics

Socio-demographic factors	Boys (n=377)	Girls (n=343)	Total (n=720)	
Class	One	18.57	21.57	20
	Two	19.36	20.70	20
	Three	21.75	18.08	20
	Four	19.36	20.70	20
	Five	20.95	18.95	20
Age	Six years	18.57	21.57	20
	Seven years	19.36	20.70	20
	Eight years	21.75	18.08	20
	Nine years	19.36	20.70	20
	Ten years	20.95	18.95	20
Religion	Muslim	89.39	83.38	86.53
	Hindu	10.62	16.62	13.47

n=number of students

Description of Enabling Factors

Table 2 presents the occupation of parents of the school children. The majority of the fathers of the students were found to work as day laborer 356 (49.44%) followed by Service holder (19.86%) where in both occupation fathers of boys students were greater than fathers of girls students and the lowest of them was farmer 85 (11.81%). Most of the mothers (89.58%) were housewife. Table 3 indicates that the majority of the students' fathers were illiterate (fathers of the boy students 41.91% and fathers of the girl students 44.31%) followed by primary level education (27.36%). The lowest of the students' fathers (8.47%) had completed their bachelor degree or diploma. More than 90% of the students' mothers were illiterate. Very few of them (about 8%) had primary and above level of education. Table 4 shows that about half of the monthly income of the fathers of the students were in between 5000 to 10,000 BDT followed by a range of >10000-15000 (about 34%). It also shows that most of the families (about 85%) had member of 4 to 6 persons.

Table 2. Percent distribution of the students according to their parents' occupation

Students	Boys (n=377)	Girls (n=343)	Total (n=720)
Fathers Occupation			
Day labor ¹	48.54	50.44	49.44
Farmer ²	11.14	12.54	11.81
Businessman	19.63	18.07	18.89
Service holder	20.68	18.95	19.86
Mothers Occupation			
Day labor ³	9.28	11.66	10.42
Housewife	90.72	88.34	89.58

¹drivers of vehicles were included in the day laborer group; ²Fishermen were included in the farmer group; ³Day laborer included women who were related to subsistence level of economic activity; n= number of students

Table 3. Percent distribution of the students according to their parents' educational level

Students	Boys (n=377)	Girls (n=343)	Total (n=720)
Fathers' Education			
Illiterate	41.91	44.31	43.06
Class one to five	26.53	28.28	27.36
Class six to ten	22.28	19.82	21.11
SSC and above	9.28	7.59	8.47
Mothers' Education			
Illiterate	92.84	91.55	92.22
Primary and above ¹	7.16	8.45	7.78

¹Here above is up to secondary level; n=number of students

Table 4. Percent distribution of the of the students according to their father's monthly income (BDT) and number of family members

Students	Boys (n=377)	Girls (n=343)	Total (n=720)
Fathers' monthly income			
5000-10000	49.07	49.85	49.44
>10000-15000	33.16	34.40	33.75
>15000-20000	17.77	15.75	16.81
Number of family members			
<4 members	5.31	7.58	6.38
4 to 6 members	86.47	83.38	85.00
7 to 9 members	8.22	9.04	8.62

n=number of students

Description of Nutritional Status and Hygienic Practices

Body mass index (BMI) for age percentile was used to categorize nutritional status of the students (Table 5). It shows that most of students (65.56%) were normal. Significantly ($p=0.003$) boy students were found more underweight than girl students (32.1% vs. 28.7%). On the other hand girl students were found significantly more at risk of overweight than boy students (3.5% vs. 2.7%). About 31% children were found underweight whereas only 3.4% were overweight (Fig. 2) based on weight for age Z scores (WAZ). Again, boy students were found more underweight than girl students (32.1% vs. 28.9%), while overweight was more prevalent in girl students compared to boy students (5.2% vs. 3.2%). All the children were found practicing hygienic behavior such as washing hand before eating and after defecation (Fig. 3). About 96% children used tube-well water as a drinking source and all were found to brush their teeth regularly.

Table 5. Percent distribution of the students based on nutritional status (by BMI) for age percentile category

Nutritional Status	Boys (n=377)	Girls (n=343)	Total (n=720)	P-value*
Under weight ¹	32.10	28.86	30.56	0.003
Normal ²	64.72	66.47	65.56	0.002
At risk over weight ³	2.65	3.50	3.06	0.007
Over weight ⁴	0.53	1.67	0.83	0.023

*significant at $p<0.05$, chi-square test was performed; ¹ underweight (≤ 5 Percentiles); ² normal (>5 to 85 Percentiles); ³ at risk overweight (>85 to 95 Percentiles); ⁴ overweight (>95 Percentiles)

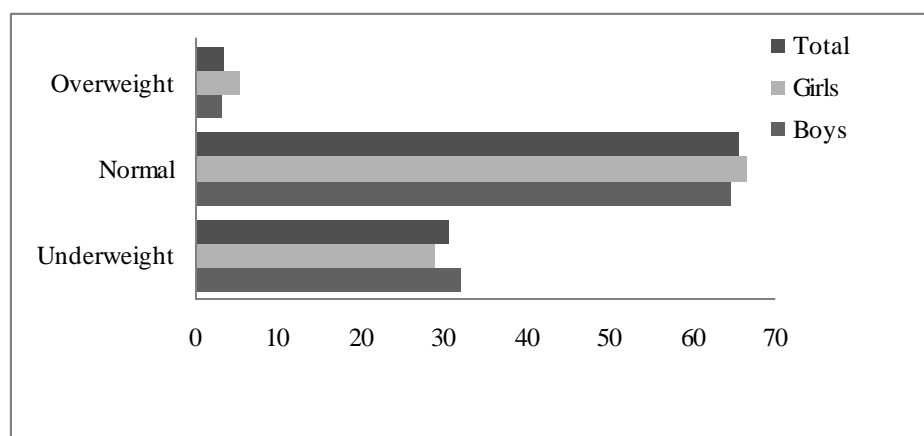


Fig. 2. Percentage of underweight, normal and overweight children based on WAZ score

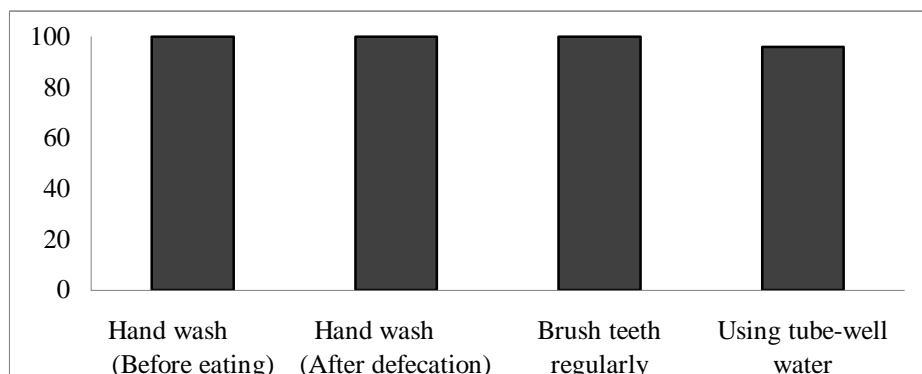


Fig. 3. Percentage of children practicing some hygienic practices

DISCUSSION

Children in the age group of 5-14 years are often considered as school age. Since 1972, the United Nations Educational Scientific and Cultural Organization (UNESCO) consider 6-11 years as primary school age and 12-17 years as secondary school age. In Bangladesh about one fifth of the population consists of children between 5 to 14 years of age, which includes the children from primary and secondary school age. School age is as a dynamic period of growth and development because in this age phase children go through physical, mental, emotional and social transforms. In other words, the foundation of good health and sound mind are developed during this school age period. Assessment of nutritional status in this age group is very important to track the overall growth and to identify any growth faltering as well. Hence this study was formulated with the objective, to assess the nutritional status of school-age children of Jessore District in Bangladesh.

A study conducted by Best *et al.* (2010) reported that underweight were most prominent in South-East Asia and Africa, whereas in Latin America, the prevalence of underweight was generally below cent percent. In this study we analyzed the prevalence of underweight as a marker of under nutrition and our findings were much higher than findings from South Africa, where prevalence of underweight counts almost 10% and it remain a public health problem in children (Labadarios *et al.* 2008). In this study the prevalence of underweight was 30.56%. The school children in our study were found to be well nourished than the findings from rural Punjab school children conducted in India (Panda *et al.* 1997), where the prevalence of malnutrition was 87.4%. However, our findings are to be higher than WFP and UNICEF survey at 2006 in Indonesia, which reported that 21.2% student of primary school in 8 Districts in Nanggroe Aceh Darussalam was underweight, 27.2% stunting and 7.6% wasting consecutively (Pangaribuan *et al.* 2007). When we are to compare our school children with the school children from different part of India, the nutritional status of our sample children was found worse than that of India. The standards of nutrition among children in our study were poorer than those found in children in Delhi (Dhingra *et al.* 1977) and in urban school-age children in Tirupati (Goyal and Chavan, 1993; Indirabai and Malika, 1976).

Percentage of malnourished school children in our study was slightly less (0.5%) than the school children from Madras (Sunderam 1978). The rate of under nutrition of the present study is much more less than the recorded prevalence rate of under nutrition of 53.9% among school-age children in Assam-India (Medhi *et al.* 2006). These wide range disparities in findings of different studies may be due to differences in study settings and differences in geography.

In our study we also found that boys were more underweight than girls. The evidence from other studies suggests that boys are more likely to be stunted and underweight than girls, and in some countries, more likely to be wasted than girls (Shahabuddin 2000; Partnership for Child Development 1998). This finding is not in accordance with others studies conducted in Bangladesh where it was reported that rural girls were more likely to be severely undernourished than boys in Bangladesh (Choudhury *et al.* 2000; Roy 2000).

Generally, it needs to be mentioned here that due to the cross-sectional design of the study and lack of other nutritional assessment information of the school children, it is not easy to draw a concrete conclusion about the nutritional status of the children. However, we highlighted that a considerable proportion of the children in Jessore District of Bangladesh were undernourished.

CONCLUSION

It is apparent that the crisis of malnutrition in Bangladesh though declined from the past two decades is still of alarming magnitude, but also of great obscurity for its multifaceted nature. Government of Bangladesh has taken a lot of initiatives with national and international organizations to minimize the extent of vicious consequence of malnutrition among the school-age children. Tackling malnutrition in school-age children requires a more nutrition specific as well as nutrition sensitive approaches. Skills-based nutrition education for the family, dietary diversity with enough of safe and nutritious foods, effective infection control strategies, training of

public health workers especially community health care providers and respected teachers of primary school, intersectoral collaboration need to be implemented to tackle the problem of malnutrition among school-age children.

REFERENCES

- Ahmed T, Hossain M, Sanin K (2012) Global burden of maternal and child under-nutrition and micronutrient deficiencies. *Ann Nutr Metab*, 61, 8-17.
- Best C, Neufingerl N, Van Geel L, Van den Briel T, Osandarp S (2010) The nutritional status of school-aged children, why should we care? *Food and Nutr Bull*, 3(31), 400-417.
- Choudhury KK, Hanifi MA, Rasheed S, Bhuiya A (2000) Gender inequality and severe malnutrition among children in a remote rural area of Bangladesh. *J Health Popul Nutr*, 18, 123-30.
- Dhingra DC, Anand NK, Gupta S (1977) Health status of school children of various socio-economic groups. *Indian Pediatr*, 14(3), 243-246.
- Goyal RC, Chavan UA (1993) Health status of school children in Ahmednagar city. *Indian J Maternal Child Health*, 4(3), 81-83.
- Indirabai K, Malika R (1976) School health service programme, a comprehensive study of school children of Tirupati city, Andhra Pradesh. *Indian Pediatr*, 13(10), 751-758.
- Islam S, Jamal AA (2007) *Banglapedia: National Encyclopedia of Bangladesh (Second ed)*. Bangladesh: Asiatic Society of Bangladesh.
- Jelliffe DB (1966) *The assessment of the nutritional status of the community*. Geneva: WHO.
- Kuczmariski RJ, Ogden CL, Guo SS, Grummer-Strawn L, Flegal KM, Mei Z (2002) 2000 CDC Growth Charts for the United States: methods and development. *Vital Health Stat*, 11(246), 1-190.
- Labadarios D, Swart R, Maunder EM, Kruger HS, Gericke GJ, Kuzwayo PM (2008) Executive summary of the national food consumption survey fortification baseline (NFCS-FB-1) South Africa, 2005. *S Afr J Clin Nutr*, 21(Suppl 2), 245-300.
- McPherson RS, Montgomery DH, Nichaman MZ (1995) Nutritional status of children, what do we know? *Journal of Nutrition Education*, 27, 225-232.
- Medhi GK, Barua A, Mahanta J (2006) Growth and nutritional status of school age children (6-14 years) of tea garden worker of Assam. *J Hum Ecol*, 19, 83-85.
- Panda P, Benjamin AI, Zachariah P (1997) Growth and morbidity patterns among rural school children in Ludhiana, Punjab. *Health Popul Perspect Issues*, 20(1), 20-28.
- Pangaribuan RV, Wiradnyani LA, WFP, UNICEF (2007) *Health and Nutritional Status Survey for Elementary School Children in Nanggroe Aceh Darussalam Province and Nias Island*. University of Indonesia. Banda Aceh: SEAMEOTROPED Regional Center for Community Nutrition.
- Partnership for Child Development (1998) The anthropometric status of school children in five countries in the Partnership for Child Development. *Proc Nutr Soc*, 57, 149-158.
- Roy NC (2000) Use of Mid-upper Arm Circumference for Evaluation of Nutritional Status of Children and for Identification of High-risk Groups for Malnutrition in Rural Bangladesh. *J Health Popul Nutr*, 171-180.
- Shahabuddin AK (2000) Adolescent nutrition in a rural community in Bangladesh. *Indian J Pediatr*, 67(2), 93-98.
- Smith LC, Haddad L (2000) *Explaining Child Malnutrition in Developing Countries A Cross-Country Analysis*. Washington, D.C.: International Food Policy Research Institute.
- Sunderam VM (1978) Health profile of school children in Madras city. *Indian Pediatr*, 15(9), 725-730.
- Waterlow IC, Buzina R, Keller W, Lane IM, Nichaman MZ, Tanner IM (1977) The presentation and use of height and weight data for comparing the nutritional status of groups of children under the age of 10 years. *Bull World Health Organ*, 55, 489-498.
- World Health Organization (1995) WHO Expert Committee on Physical Status: Physical status: the use and interpretation of anthropometry, Report of a WHO expert committee. Geneva: World Health Organization (WHO).
- World Health Organization (2012) *Levels and trends in child malnutrition, UNICEF-WHO-The world Bank joint child malnutrition estimates*. Geneva: World Health Organization (WHO).